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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,922	05/10/2001	Masafumi Sakamoto	134.137	4415

7590 08/12/2003

PATTERSON THUENTE SKAAR & CHRISTENSEN, L.L.C.  
2000 US Bank Building  
777 East Wisconsin Avenue  
Milwaukee, WI 53202

EXAMINER

JONES, JUDSON

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/851,922

Applicant(s)

SAKAMOTO, MASAFUMI

Examiner

Judson H Jones

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 3 is/are allowed.
- 6) ☒ Claim(s) 1 and 20-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 09/056,190.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

Applicant's arguments with respect to claims 1 and 20-29 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bedford 3,678,352 (of record) in view of Denk et al. 5,292,284 A, Earle et al. 4,742,258 A and Hasegawa et al. 6,055,957 A. Bedford discloses permanent magnet motor having a controlled switch circuit, three phase windings, 6m pieces of stator main poles arranged side by side, the stator poles of one phase being wound around a first stator main pole and every third main pole wherein when the windings of one phase are excited with a direct current, m pieces of N pole and m pieces of S pole are formed alternately and also having a rotor having Z/2 pieces of N pole and Z/2 pieces of S pole. Bedford does not disclose his device usable as a stepping motor and does not disclose a cylindrical permanent magnet rotor. Hasegawa et al. teaches in column 7 lines 38 ½ to 41 ½ that pulse-controllable motors are usable as stepping motors. See element 75 in figure 2 of Bedford, which discloses the pulse controlling features of this device. Since Hasegawa et al. and Bedford are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized the device of Bedford as a stepping motor in order to increase the usefulness of the device. Denk et al. teaches in figure 1 making a cylindrical permanent magnet rotor. In figure 7 Denk et al. discloses an alternative embodiment where filler parts 125 and a retaining hoop 120 are used with magnets in order to create a

Art Unit: 2834

cylindrical rotor with an improved flux path but does not disclose the reasons for making the rotor cylindrical. Earle et al. teaches in column 6 lines 40-50 that making a rotor cylindrical reduces noise and drag. Since Earle et al. and Denk et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have realized that making a rotor cylindrical reduces noise and drag. Since Earle et al., Denk et al. and Bedford as modified by Hasegawa et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized filler material and a retaining hoop to make the rotor of Bedford et al. cylindrical. It further would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a cylindrical permanent magnet rotor as taught by Denk et al. in figure 1 in order to reduce the cost of the rotor by eliminating the step of adding filler material to the permanent magnet while retaining the advantage of making the rotor cylindrical.

Claims 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bedford in view of Denk et al., Earle et al. and Hasegawa et al. as applied to claim 1 and further in view of Sakamoto 6,028,377 (of record). Bedford as modified by Denk et al., Earle et al. and Hasegawa et al. discloses the stepping motor but does not disclose each stator pole piece including a notched portion having at least two raised teeth. Sakamoto et al. teaches that placing teeth on poles allows smaller steps and additional steps for a stepping motor as shown in figure 3. Since Sakamoto et al. and Bedford as modified by Denk et al., Earle et al. and Hasegawa et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized teeth placed on poles in a stepping motor in order to allow for smaller steps and more steps, thus improving the precision of the stepping motor.

Art Unit: 2834

*Allowable Subject Matter*

Claims 2 and 3 are allowed.


The following is a statement of reasons for the indication of allowable subject matter:

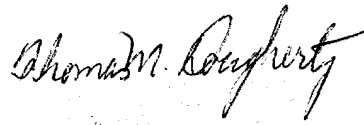
The prior art of record does not disclose or teach a three phase permanent magnet stepping motor with a number of rotor poles as specified in the formula in claims 2 and 3. Sakamoto 5,386,161 discloses a formula in the abstract of the disclosure where  $P=12n\pm 4$ , not  $12n\pm 2$ .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ   
August 1, 2003

  
8